Wireless Telecommunications Interoperability Standardization for Justice/Public Safety/Homeland Security

Outputs

- Wireless telecommunications Statement of Requirements (SOR) for Public Safety.
- Functional and performance specifications for Project 25/TIA digital radio & system standards.
- Standardized measurement methods for testing Project 25 radios and systems.

Too often, public safety practitioners' communications systems do not meet their needs for *operability* (security, service area, performance, and survivability for intra-agency communications) and *interoperability* (inter-discipline and inter-jurisdiction communications where and when communications are needed). The public safety community recognizes that five steps are needed to specify and implement wireless systems: (1) define *user requirements* for communications and information exchange, (2) specify the *architecture framework* to support the communications, (3) develop *standards* for the systems, (4) conduct *technology performance tests* to evaluate proposed solutions for the standards, and (5) conduct *vendor products functional tests* to validate that tested equipment supports the standards prior to implementation. ITS is the common technical thread through all these steps and it conducting a technical program aimed at facilitating effective interoperability and information sharing among dissimilar wireless telecommunications systems in the justice/public safety/homeland security community.

The ITS program is sponsored by several Federal departments and programs with a keen interest in public safety interoperability, including: National Institute of Standards and Technology (NIST) Office of Law Enforcement Standards (OLES), Department of Justice Office of Community Oriented Policing Services (COPS), Department of Homeland Security's Public Safety Wireless Communications (SAFECOM) Program, Federal Partnership for Interoperable Communications (FPIC), and the Department of Homeland Security Chief Information Officer's Wireless Management Office (WMO).

Wireless Telecommunications Statement of Requirements (SOR)

Public safety communications are often too critical and unique to rely on traditional solutions. To have a vision of their communications and information sharing needs, the public safety practitioners have defined their functional and operational tasks while relating their communications needs now and into the future. ITS has helped document that vision in *Statement of Requirements for Public Safety Wireless Communications and Interoperability – Version 1.0*, at http://www.safecomprogram.gov/SAFECOM/library/technology/1200_statementof.htm. This SOR is focused on the functional needs of public safety first responders — Emergency Medical Services (EMS) personnel, fire fighters, and law enforcement officers — to communicate and share information as authorized when it is needed, where it is needed, and in a mode or form that allows the practitioners to use it effectively. The communications mode may be voice, data, image, video, or multimedia that includes multiple forms of information. To keep the emphasis on functional requirements, the SOR avoids specifying either technologies or business models (i.e., whether requirements should be addressed through owned products and systems, or via commercial services). With aid of ITS, the practitioners will soon have available Versions 1.1 and 2.0 that will provide more detail on technical parameters and values derived from subjective practitioner tests designed to evaluate quality and performance requirements of the communication systems and services.

Wireless Communications and Information Exchange Architecture Framework

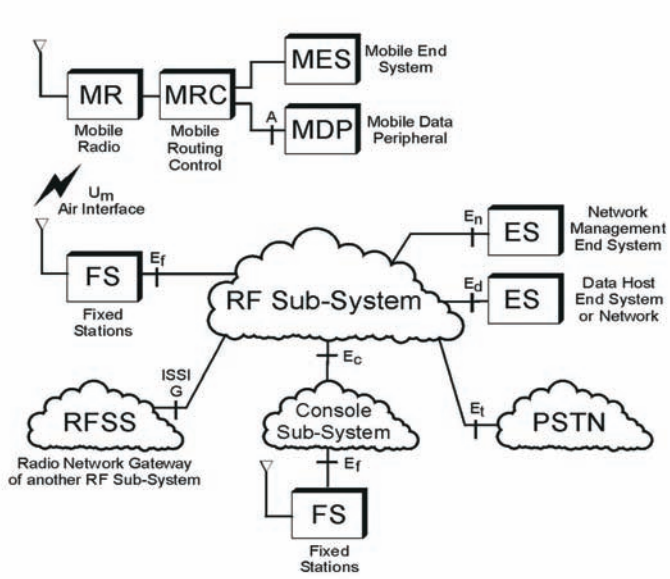
Through its sponsors, ITS is supporting the development of an architecture framework for wireless communications and information exchange interoperability. Working with SAFECOM and others, ITS is expediting the overall Federal effort by taking advantage of background engineering work already conducted. For example, ITS has investigated frameworks for high-level enterprise architectures, and is also reviewing and analyzing the wireless integration activities being performed, and contemplated, to characterize common architectural elements that

have been successfully applied in the field. Governance and other non-technical issues have also been researched. Once the architecture framework (system of systems) document matures, it will be reviewed and approved by practitioners as was the SOR. The framework will then guide the development of standards that support it.

Project 25/TIA TR-8 and Project MESA

Standards development activities for the public safety community's new generation digital land mobile radio systems are being performed under a joint effort of public safety users and equipment manufacturers. The users are represented by local, state, and Federal government organizations, and manufacturers are represented by industry members of the Telecommunications Industry Association (TIA). This standards development process is known as Project 25 (P25). P25 members establish user requirements and draft specifications based on the users' perspective, and TIA (and its TR-8 Committee) uses processes accredited by the American National Standards Institute to develop formal, nationally recognized standards that can be used to design and manufacture equipment and evaluate its performance and interoperability. ITS represents users on technical contributions and issues and provides guidance when technical decisions are to be made. ITS holds leadership positions within P25 Working Groups: Vice Chair of the ISSI Task Group and Vice Chair of the Project 25 Systems Architecture Working Group (PSAWG); and Chairman of the BroadBand Task Group (BBTG). In addition, an ITS engineer represents Federal users on the Project 25 Steering Committee.

With Congress providing grants to state and local governments for telecom equipment and the funding for Federal public safety communications systems, Congressional bills have defined the importance of having P25 standards in place. As a result, the P25 Steering Committee and technical committees have set aggressive timeframes for completion of the documents that make up the standards associated with each P25 interface. The interfaces defined with the highest priority for completion (shown in the figure) are the Inter-RF SubSystem Interface (G, ISSI), the Fixed Station SubSystem Interface (E_f, FSSI), and the Console SubSystem Interface (E_c, CSSI).



P25 system interfaces.

Standards for these interfaces will be in place in late 2006, and will be sufficient for manufacturers to begin building, testing, and delivering products. Commercially available equipment is expected to be available 12-18 months after the standards are approved. ITS continues to be active and instrumental in helping to accelerate the technical completion of these critical interfaces.

ITS continues to develop procedures to test the performance and interoperability of P25 radio systems. In FY 2006, the Conformance Test Procedure documents will be put into the P25 process for review and consensus acceptance.

For Project MESA, a joint effort of the European Telecommunications Standards Institute (ETSI) and TIA, efforts have concentrated on defining the public safety requirements for broadband mobile applications worldwide. ITS has provided user operational requirements that represent the views of U.S. public safety users. An ITS engineer is Chair of the Technical Specification Group — Systems.

For more information, contact:
Jeffrey Bratcher
(303) 497-4610
e-mail jbratcher@its.bldrdoc.gov
or
Arthur Webster
(303) 497-3567
e-mail awebster@its.bldrdoc.gov